

## **CLAIMS**

What is claimed is:

1. A programmable machine for measuring time based on linear or non-linear programmable functions comprising:
  - a/ a data entry unit to input parameters that describe mathematical positive, monotonic functions.
  - b/ an arithmetic logical computation unit that performs operations on numeric data, by computing the programmed function, using time as the independent variable.
  - c/ a memory for storing numeric parameters for functions, counters of timer events, sections, results of function computation and mode selection.
  - d/ a clock that generates equally spaced impulses, that are fed to the arithmetic logical unit for transformation.
2. A programmable machine for measuring time based on linear or non-linear programmable functions as claimed in claim 1, further comprising:
  - a/ a display means
  - b/ display registers for storing data to be displayed by said display means.
3. A programmable machine for measuring time based on linear or non-linear programmable functions as claimed in claim 2 wherein said data entry unit is a button pad having provisions for inputting numeric data, switch mode commands, memory register navigational commands, selection of pre-programmed functions or sets of functions.

4. A programmable machine for measuring time based on linear or non-linear programmable functions as claimed in claim 2 wherein said display is a liquid crystal or plasma display.

5. A programmable machine for measuring time based on linear or non-linear programmable functions as claimed in claim 2 wherein said display, when the running mode is selected, shows:

- a/ time within sections until the timer counter is reset;
- b/section number;
- c/timer event number until the timer event counter is reset;
- d/pre-programmed effort selected;

and when the input mode is selected shows:

- a/ time reserved for each section;
- b/section number;
- c/programmed function for the section;
- d/pre-programmed function set;
- f/ alarm indicator;
- g/ timer mode indicator;

6. A programmable machine for measuring time based on linear or non-linear programmable functions as claimed in claim 2 wherein said display, when the running mode is selected, shows time either going up towards the total time of the section(s) or to go down, from the total time of the section(s) towards 0, depending on programmed timer mode.

7. A programmable machine for measuring time based on linear or non-linear programmable functions as claimed in claim 2 wherein said memory stores several

sections to be programmed independently, each section containing information and parameters about the time transformation to be performed and the timer mode.

8. A programmable machine for measuring time based on linear or non-linear programmable functions as claimed in claim 2 wherein said arithmetic logical unit converts time linearly, without transformation, for sections that are not programmed, to account for pauses or breaks in the effort, and linearly or non-linearly, based on the programmed function, for sections that are programmed.

9. A programmable machine for measuring time based on linear or non-linear programmable functions as claimed in claim 1 further comprising:

a/ a device that creates an audible alarm for each timer event counter increase and section counter change.

b/ earphones that connect to the device and transmit audible alarms for each timer event counter increase and section counter change.

10. A programmable machine for measuring time based on linear or non-linear programmable functions as claimed in claim 2 wherein said arithmetic logical computation unit is a general computation unit that executes programs in a pre-determined programming language and the specific functionality of time transformation with the purpose to create time events is done by software.

11. An electronic programmable timer for measuring time for exam events comprising:

a/ a data entry unit to input parameters that describe the exam sections, the time allocated for the exam questions and the number of questions.

b/ an arithmetic logical computation unit that performs operations on numeric data, by computing a linear function, using time as the independent variable.

c/ a memory for storing numeric parameters for exam events, counters of timer events, sections, results of function computation and mode selection.

d/ an electronic clock that generates equally spaced impulses, that are fed to the said arithmetic logical unit for transformation.

12. An electronic programmable timer for measuring time for exam events as claimed in claim 11, further comprising:

a/ a display means

b/ display registers for storing data to be displayed by said display means.

13. An electronic programmable timer for measuring time for exam events as claimed in claim 12 wherein said wherein said data entry unit is a button pad having provisions for inputting numeric data, switch mode commands, memory register navigational commands, selection of pre-programmed exams or efforts, reset intervals, pause sections.

14. An electronic programmable timer for measuring time for exam events as claimed in claim 12, wherein said display, when the running mode is selected, shows:

a/ time within sections until the timer counter is reset;

b/section number;

c/question number until the question counter is reset;

d/pre-programmed effort selected;

and when the input mode is selected shows:

a/ time reserved for each section;

b/section number;

c/pre-programmed exam set;

- d/ alarm indicator;
- e/ timer mode indicator;
- f/ reset indicator for the question counter;
- g/ reset indicator for the time counter.

15. An electronic programmable timer for measuring time for exam events as claimed in claim 12 wherein said button keyboard pad further comprising:

- a/ a start/stop mode selection button;
- b/ a section selection button;
- c/ an option selection button;
- d/ numeric buttons;
- e/ a button that will automatically program the timer with default settings for the SAT;
- f/ a button that will automatically program the timer with default settings for the PSAT;
- g/ buttons that can be custom programmed by the to match a particular exam and a particular user.

16. An electronic programmable timer for measuring time for exam events as claimed in claim 12 wherein said electronic memory can store several sections to be programmed independently; each section containing information about the number of questions for the section, the length of time for the section and information about resetting the question counter and/or the time counter at the beginning of the section.

17. An electronic programmable timer for measuring time for exam events as claimed in claim 12 wherein said arithmetic logical computation unit converts time without transformation, for sections that are not programmed, to account for pauses or breaks in

the effort, and converts time linearly, but with a slope different than 1, for programmed sections, the slope being computed from entered data about the number of questions and the time length of the section.

18. An electronic programmable timer for measuring time for exam events as claimed in claim 12 further comprising:

a/ a device that creates an audible alarm for each timer event counter increase and section counter change.

b/ earphones that connect to the device and transmit audible alarms for each timer event counter increase and section counter change.

19. An electronic programmable timer for measuring time for exam events as claimed in claim 12 further comprising the step of mode selection with a start/stop button; the input mode for section selection and parameter setting and the running mode for display of question numbers, sections and time.

20. An electronic programmable timer for measuring time for exam events as claimed in claim 12 wherein said arithmetic logical computation unit is a general logical computation unit such as may be included in an programmable electronic calculator, that executes programs in a pre-determined programming language and the specific functionality of time transformation with the purpose to create and display time events is done by software.